

-5-

Regarding paragraph 3 page 2 Applicant has respectfully to note:

Under the objection of Examiner Applicant amended claims and took off diagonals of cells not parallel nor perpendicular to longitudinal side of the grid.

Applicant has respectfully to note that direction of movement of grid parallel to longitudinally side of grid has support in drawing Fig. 1 of original application.

On Examiner's objection that during movement the flat focused grid will block all or almost all primary X-ray applicant respectfully has been submitted next calculations:

Mostly grids move onto distance 5 mm to each side from central beam which is perpendicular from focal point to surface of grid for mammography grid with focus distance 750 mm and length 250 mm of longitudinally extended side, and 10 mm for general purpose grid with focus distance 1500 mm and length 500 mm accordingly. Therefore for end positions of grids (which are small component of dynamic positions of grid during it movement) trigonometry calculations give the result for the blocking of primary radiation from 2 % (for grids with ratio 4) till 12 % (for grid with ratio 12 - max. ratio for cellular Grids).

Integrated losing (or blocking) of primary radiation during the movement of grid defines by formula (1):

$$\% \text{ of losing (or blocking) of primary radiation : } \int_0^S \frac{dx}{x} \cdot 100\% \text{ where } S = 5 \text{ and } 10 \text{ mm} \quad (1)$$

Computing of trigonometric data gives the result from .69 % for grids with ratio 4 and movement 5 mm (.197 in.) to 2.48 % for grids with ratio 12 and movement 10 mm (.394 in.). Therefore practically any losing of primary radiation and following increasing of dose doesn't come with moving of grid during the X-ray procedure in today's technology.

Applicant has respectfully to note that all contemporary X-ray machines in the world for conventional medical x-ray technology are supplied by Bucky mechanisms for movement of grids in which using grids have been installed. Without these today's x-ray medical technology can't work.

Caldwell

Caldwell's reference discloses a radially focused circular x-ray grid that is composed of simple thin lead strips (lead is only soft x-ray absorbent but not construction material and it can't keep the configuration of strips.), the strips on the side view are the parts of the radiuses from the focus of grid and they have the uniform length as result this grid cannot provide required sharpness of x-ray images, Caldwell's grid having cells for the transmission of the X-rays with sides oriented about 45 degrees to the direction of movement of grid which doesn't provide the erasement of images of cells on the mentioned x-ray images. Caldwell does not suggest like in current application or even imply the hypotenusedly oriented flat cellular grid where on the side view the thin partitions (Caldwell calls them strips) between cells have the different length

-6-

proportionally to hypotenuses oriented along them to the focus of grid which provide required sharpness of x-ray images, and sides of cells oriented on the plane view onto such angle to direction of movement of grid that completely eliminates the images of cells on the x-ray image, said partitions are complicated and contain two components: inside part made from hard material which keeps the mechanical properties of partitions (and grid) and x-ray absorbing layer covering the surfaces of partitions for keeping of physical properties of partitions (and grid).

Mattsson

Mattsson describes the cross, not cellular grid, which contains sides of cross section intervals parallel or perpendicular to direction of movement of grids along the patient body as provide by conventional x-ray machines. Mattsson proposed to move cross grid under the angles different from 45 degrees to patient body for erasement of image of cells. Such movement of grid under the angle to patient body will take grid from the patient and destroy the edges of x-ray image and requires redesign of conventional x-ray machines. Also Mattsson's movement wasn't proposed for cellular grid it was proposed for cross-section grid which has absolutely different design.

In opposite Applicant proposed for cellular grid to arrange the sides of it cells to direction of movement of grid under the Mattsson's angles which allows to use for cellular grids the conventional x-ray machines with movement of grid parallel to patient body, doesn't take grid from patient and doesn't make any damages for x-ray image.

Applicant has respectfully to note that his invention has much more scope that only Mattsson's angles and includes all angles of arrangement of sides of cells which guarantee the erasement of their images on the X-ray images, and there are much more angles, not Mattsson's only. In current application Mattsson's angles are used only as sample with prior published mathematical support of some of angles for complete erasement of images of cells during the movement of grid.

Millenaar

The Office has previously cited Millenaar disclosing a cover for cellular grid. While Millenaar discloses a cover his linear grid, he does so in the context of the manufacture of a composite material from which an x-ray linear grid may be constructed. He does not teach or even suggest as the claim recite, that the cover designed to enclose layers of the grid material for the linear grid also could be use for covering of cellular grid especially for sealing of cells which contain gas or vacuum.

Liebert et al

Liebert represents the stationery non movable cellular grid which joint motionless.

-7-

with image receptor. Attempt to move such grid will have the result motion it together with image receptor (not move relatively to image receptor) and it will be no any erasement of images of cells on x-ray image onto receptor. This fixed design of grid-receptor system can't be used in practice of x-ray medical diagnostic because image of partitions between cells will be cause for losing of 20-40 % of information from x-ray image about patient especially this losing is too big for honeycomb and spiral design and make x-ray medical diagnostic impossible.

In opposite Applicant's cellular grid separated from x-ray receptor which have tetragonal cells with sides inclined under the specific angles guarantees total erasement of images of cells with minimum dose of radiation for patient and maximum medical diagnostic information.

In the claims

Applicant now address the amended and new claims, and offer remarks as to why these claims are distinguishable over the cited art.

Claims 46 and 55 are independent claims recites a flat cellular grid having throughgoing cells with partitions inclined to focus of grid and having on the side view variable length proportionally to hypotenuses of corresponded triangles, and also having on the plane view inclination of sides of cells onto the such angle to direction of longitudinal side (claim 46) or to direction of movement of grid (claim 55) that completely erase image of cells during the x-ray procedure with movement of grid.

Claim 71 is independent claim similar to claim 55 with indicating of tetragonal form of cells.

Claim 73 is independent claim which reflects the complicated structure of partitions between cells which built from construction material with strong mechanical properties which keeps the cells configuration, such material is covering by material with X-ray absorbing properties, and sides of cells are orientated onto such direction to movement of grid during the X-ray procedure with movement of grid that images of cells are completely erased.

As has been previously discussed neither Caldwell or Liebert singularly or in combination suggest or imply such a design, and applicant believes they are allowable over the art.

Claims 61-70, 72 and 74 are dependent claims, and are thus, allowable as being dependent upon an allowable independent claims.

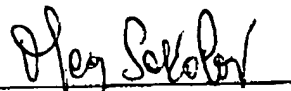
Applicant also has respectfully to note that recitations of movement of grid in the claims are already done and he doesn't fill that third time recitation will make more clear the claims.

Applicant has also respectfully to note that his patent application for x-ray machine with cellular grid filed in 1995 doesn't contain claims with design of grid, it claims contain only design of x-ray machine, and they are clearly distinguishable from claims of current application filed in 1993.

-8-

Applicant now submits that the claims are in condition for allowance and respectfully requests the same.

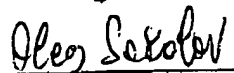
Respectfully submitted,



Oleg Sokolov,
Applicant

28 Rose Lane #38
Danbury, CT 06811
Phone (203)743-4458

I hereby certify that this correspondence
has being deposited by Fax 703-308-7722
December 20 1998, addressed to:
Sr. Examiner C. Church
Commissioner of
Patents and Trademarks,
Washington D.C. 20231

 Date: 12/20/98
Oleg Sokolov